



## PATENT ABSTRACTS OF JAPAN

(11) Publication number: **05267331 A**(43) Date of publication of application: **15.10.93**

(51) Int. Cl.

**H01L 21/336****H01L 29/784****H01L 21/266**(21) Application number: **04094794**(22) Date of filing: **21.03.92**(71) Applicant: **RICOH CO LTD**

(72) Inventor:  
**KONISHI JUNICHI**  
**TANEDA TOSHIHIKO**  
**SHIOJIRI KAZUYA**  
**FUKUSHIMA YASUSHI**  
**YOSHIOKA MAMORU**  
**ABE HIROYUKI**

**(54) MANUFACTURE OF MOS SEMICONDUCTOR DEVICE**

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**(57) Abstract:**

**PURPOSE:** To manufacture an LDD-structure MOS transistor having a pocket implantation region with good reproducibility and by using a method not using an etching-back operation.

**CONSTITUTION:** (A) A gate insulating film 4 is formed in an N-type active region; a polysilicon gate electrode 5 is formed on it; boron is implanted by making use of the gate electrode 5 as a mask; low-concentration P-type regions 7, 8 for source-drain use are formed. (B) An SiO<sub>2</sub> film 9 is formed on the surface of the gate electrode 5 by a thermal oxidation operation; boron is implanted by making use of it as a mask; high-concentration P-type regions 11, 12 for source-drain use are formed. (C) The SiO<sub>2</sub> film 9 is removed; after that, phosphorus is implanted by making use of the gate electrode 5 as a mask; low-concentration N-type regions 13, 14 in a pocket implantation layer are formed.

